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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,248	10/10/2003	Wei Liu	WYE-009	5095

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EXAMINER	
PROUTY, REBECCA E	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/684,248	LIU ET AL.	
	Examiner	Art Unit	
	Rebecca E. Prouty	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *1-7 and 12-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/05, 1/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Applicant's election without traverse of Group II, Claims 8-11 in the reply filed on 4/24/06 is acknowledged.

Claims 1-7 and 12-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/24/06.

Claim 8 is objected to because of the following informalities: "wherein said fragment comprising" is grammatically awkward. Amendment to "wherein said fragment comprises" is suggested. Appropriate correction is required.

Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 (upon which Claim 11 depends) is vague in the recitation of "a variant of a fragment of SEQ IN NO:2". The specification on page 10 defines a "a variant of a polypeptide" as a polypeptide that differs from the original polypeptide by one or more substitutions, deletions, and/or insertions. The definition then goes on to state that preferably the variant has functional similarity to the original polypeptide but as worded, the definition does not require this. Thus this definition

appears to encompass any polypeptide that is not SEQ ID NO:2. However, as commonly used in the art the term implies that the claimed polypeptide has similarity to the original polypeptide in at least one of structure or function. As such the scope of this phrase is vague.

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 8-11 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The disclosure asserts utility for the polypeptide of SEQ ID NO:2 as a protein kinase, as a target molecule in the development of pharmaceuticals or as a pharmaceutical which can control intracellular physiological functions. However, the asserted utilities are not specific and substantial. While the disclosure asserts that SEQ ID NO:2 is a kinase, the specification fails to assert what compounds the protein of SEQ ID NO:2 phosphorylates. Kinases comprise a highly diverse group of proteins which phosphorylate a wide variety of different compounds including, proteins, carbohydrates, lipids and nucleic acids. While the specification asserts that the protein of SEQ ID NO:2 is a protein kinase, the disclosure fails to provide any

disclosure of what protein(s) are actually phosphorylated. Search of SEQ ID NO:2 against the public databases shows that the only disclosed sequences with high homology to the claimed protein also lack any known substrates. The most closely related protein identified by a sequence search which has known kinase activity for specific substrates is that disclosed by Hayashi et al. However the similarity of SEQ ID NO:2 to the protein of Hayashi et al. is only 20%. This is clearly insufficient to provide an expectation to a skilled artisan that they act on similar substrates. As kinases are such a large diverse family of enzymes, a mere disclosure that a protein is a kinase or a protein kinase without a more specific recitation of what type of kinase (i.e., what protein(s) is phosphorylated) is insufficient to provide a substantial utility as the skilled artisan would require further research to identify or reasonably confirm a real world context of use. The disclosure also lists a general use for the polypeptides encoded by the claimed polynucleotides as a target molecule in the development of pharmaceuticals or as a pharmaceutical which can control intracellular physiological functions. However, there is no information that links the use of the polypeptide of SEQ ID NO:2 or the polynucleotide of SEQ ID NO:1 and its variants to any specific disease state. Thus the asserted utility of the

claimed polypeptides and its variants is not substantial or specific.

Claims 8-11 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention. Furthermore, **even if** applicants were to show that the specification discloses a specific and substantial asserted utility or a well established utility for the protein of SEQ ID NO:2, claims 8, 10, and 11 would still be rejected under 35 U.S.C. 112, first paragraph, because the specification, does not reasonably provide enablement for any polypeptide comprising at least 500 consecutive amino acid residues of SEQ ID NO:2, any polypeptide comprising a sequence at least 95% identical to any fragment of SEQ ID NO:2 of at least 500 consecutive amino acid residues or any polypeptide not identical to SEQ ID NO:2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

As discussed above claim 10 is sufficiently broad as to recite any polypeptide not identical to SEQ ID NO:2. Claim 8

recites any polypeptide comprising at least 500 consecutive amino acid residues of SEQ ID NO:2 while claim 11 is directed to any polypeptide comprising a sequence at least 95% identical to any fragment of SEQ ID NO:2 of at least 500 consecutive amino acid residues. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of proteins broadly encompassed by the claims. Since the amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the proteins' structure relates to its function. However, in this case the disclosure is limited to the amino acid sequence of the protein of SEQ ID NO:2.

While recombinant and mutagenesis techniques are known, it is not routine in the art to screen for multiple substitutions or multiple modifications, as encompassed by the instant claims, and the positions within a protein's sequence where amino acid modifications can be made with a reasonable expectation of

success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions.

The specification does not support the broad scope of the claims which encompass any polypeptide comprising at least 500 consecutive amino acid residues of SEQ ID NO:2, any polypeptide comprising a sequence at least 95% identical to any fragment of SEQ ID NO:2 of at least 500 consecutive amino acid residues or any polypeptide not identical to SEQ ID NO:2 because the specification does **not** establish: (A) regions of the protein structure which may be modified without effecting kinase activity; (B) the general tolerance of kinases to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any amino acid residues with an expectation of obtaining the desired biological function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the

claimed invention in a manner reasonably correlated with the scope of the claims broadly including any polypeptide comprising at least 500 consecutive amino acid residues of SEQ ID NO:2, any polypeptide comprising a sequence at least 95% identical to any fragment of SEQ ID NO:2 of at least 500 consecutive amino acid residues or any polypeptide not identical to SEQ ID NO:2. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Claims 8, 10 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As discussed above claim 10 is sufficiently broad as to recite any polypeptide not identical to SEQ ID NO:2. Claim 8 recites any polypeptide comprising at least 500 consecutive

amino acid residues of SEQ ID NO:2 while claim 11 is directed to any polypeptide comprising a sequence at least 95% identical to any fragment of SEQ ID NO:2 of at least 500 consecutive amino acid residues. Claims 8, 10 and 11 are rejected under this section of 35 USC 112 because the claims are directed to a genus of polypeptides derived from SEQ ID NO:2 including modified polypeptide sequences, modified by at least one of deletion, addition, insertion and substitution of an amino acid residue in SEQ ID NO:2 and fragments of SEQ ID NO:2 that have not been disclosed in the specification. No description has been provided of the modified polypeptide sequences encompassed by the claim. No information, beyond the disclosure of SEQ ID NO:2 has been provided by applicants which would indicate that they had possession of the claimed genus of modified polypeptides. The specification does not contain any disclosure of the structure and/or function of all the polypeptide sequences derived from SEQ ID NO:2, nor even of SEQ ID NO:2 itself, including fragments and variants within the scope of the claimed genus. The genus of polypeptides claimed is a large variable genus including peptides which can have a wide variety of structures and functions. Therefore many structurally and/or functionally unrelated polypeptides are encompassed within the scope of these claims. The specification discloses only a

single species of the claimed genus which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that applicant had possession of the claimed invention at the time the instant application was filed.

Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 10 is rejected under 35 U.S.C. 102(e) as being anticipated by Yue et al. (WO02/46384).

Yue et al. teach a protein kinase which is a variant of the protein kinase of SEQ ID NO:2 herein. SEQ ID NO:25 of Yue et

al. is identical to residues 1-801 of SEQ ID NO:2 herein except that the protein of Yue has a deletion of residues 445-642. SEQ ID NO:25 of Yue et al. was first disclosed in 60/251,814, filed 12/7/00.

The references lined through on applicants IDS of 5/25/05 were not considered as applicants citations are incomplete. The citations do not provide sufficient information to know what two sequences are aligned in the referenced documents.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca E. Prouty whose telephone number is 571-272-0937. The examiner can normally be reached on Tuesday-Friday from 8 AM to 5 PM. The examiner can also be reached on alternate Mondays

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (571) 272-0928. The fax phone number for this Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rebecca Prouty
Primary Examiner
Art Unit 1652